Living on the Edge: Vulnerability to Poverty and Public Transfers in Mexico

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Abstract

Social policy in Mexico has focused on identifying and supporting households in extreme poverty. Yet, the country has a significant number of households just above the poverty line who are not eligible, by definition, for antipoverty programmes and are at risk of falling into poverty in the event of adverse shocks without appropriate social safety nets. This study uses cross-section and longitudinal data to understand better the profile of those "vulnerable" households, their risk exposure, and the extent to which they are covered by public transfers and insurance mechanisms. The analysis shows that until 2010 most social programmes, including the few with productive components, barely covered the vulnerable. The study calls for public policies to pay attention to the vulnerable and find a policy mix on the continuum between targeted interventions and universal insurance schemes to serve this income group.

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JEL Classification: H22, I30, O54

1. Introduction

Vulnerability has been defined as susceptibility to experiencing some form of poverty in the future. Distinguished from *risk*, which refers to possible future events which may damage welfare (Dercon, 2001), *vulnerability* can be understood as the capacity to manage such risks when the events occur. This capacity will, in turn, determine how liable households are to poverty over time. Vulnerability can then be understood as the magnitude of the threat to future poverty which a household experiences at a given point in time due to the potential realization of risk, given other more long-term disadvantages within households or the communities where they reside. In this sense, it is an ex-ante, forward-looking measure.

Vulnerability to poverty is a particularly relevant issue in Latin America. Since 2003, the region has achieved steady and dramatic declines in poverty, cutting extreme poverty (living with less than US$2.5/day[1]) by half to 12.1% in 2012. Over the same period, moderate poverty (using the US$4/day threshold) fell from 41.4% to 25.1%. Despite these gains, about 37% of the population remains vulnerable to poverty, making it the largest group in the region compared to the poor and the middle class (Cord *et al.*, 2015). As in the case of Latin America and most of its peers, vulnerability to poverty is also particularly relevant in Mexico. Notwithstanding the progress on poverty reduction and middle class expansion in the country since the early 2000s, about 43% of Mexicans remained vulnerable to poverty in 2012.

Despite its pre-eminence, the analysis of vulnerability to poverty in Mexico has only been partially undertaken in social policy and academic circles through exploring the nexus between poverty and risk. The major economic crisis of the mid-1990s (and then again in 2009) intensified the need to address risks, as well as to put in place mechanisms to help the poor cope with adverse shocks. Social security and assistance programmes, in combination with insurance and risk

[1] Unless otherwise indicated, the values of poverty lines and other thresholds to define income groups are expressed in PPP terms.

management instruments, were conceived as key components in a new agenda for combating poverty and enhancing social inclusion. However, this has not been followed by an identification of the vulnerable, nor by any robust analysis assessing fluctuations in their living standards and simultaneously tracking both the consequences of risks for this group and the public responses to them.

Two contributions of this paper are, firstly, the identification of those vulnerable to poverty at a national scale, including their profile and risk exposure. Secondly, based on this identification, we explore the extent to which vulnerable households are protected by social safety nets in the form of public transfers and social insurance. The paper adds to the growing literature on social risk management, particularly to the discussion on the design of second-generation anti-poverty programmes in developing countries. Beyond targeted transfers to the poorest individuals, these programmes look to create holistic social protection systems which grant particular benefits to specific socioeconomic groups.

Mexico is a good case study for the exploration of these topics for several reasons, not the least of which is that the country was one of the first to design and implement conditional cash transfer programmes (CCT), which have now been in operation for about two decades. For this reason, understanding the need to have a plan for when families "graduate" from CCTs, for instance, is currently a central policy question. Either due to mobility out of poverty or because households are no longer eligible (say, because there are no more school-age children left in the household), what happens when households graduate from CCTs is a key element to rethinking Mexico's social protection system. As this paper illustrates, as one goes up the income distribution it is increasingly important to move from cash transfers to insurance schemes for the most vulnerable. Another (more instrumental) reason why Mexico is a good case to study the nexus between social programmes and vulnerability is that it has good longitudinal data which allow for

this sort of analysis, as well as a special module on social programmes which allows analysis of the extent to which households are covered by such programmes.

The rest of the paper is organized as follows: Section 2 defines the concept of vulnerability to poverty and sets out the identification method; then it characterizes the magnitude, evolution and traits of the vulnerable in Mexico over the past decade. Section 3 explores the incidence of various social and risk management programmes on the vulnerable and other groups, while Section 4 concludes.

2. Vulnerability to poverty in Mexico

The notion of vulnerability in this paper aims at identifying households at risk of poverty in the future, based on their current standing, so it is an ex-ante, forward-looking measure. While the concept of vulnerability may be easy to define, the question remains of how to measure it and how to quantify its impacts on welfare.[2] While no definitive agreement exists on how to measure vulnerability, there is at least a consensus around the fact that, at a minimum, the concept should be able to capture the idea that "something bad can happen and spell ruin" for the household (Calvo and Dercon, 2008). In a more formal sense, Hoddinott and Quisumbing (2010) state that this consensus has translated into a conceptualization which includes expectations about future wellbeing levels and some benchmark (e.g., a poverty line) against which one can tell if, in fact, that something which has happened was bad or not for the household. This paper employs the definition of vulnerability proposed by Lopez-Calva and Ortiz-Juarez (2014) as an approach to the middle classes which conforms to the general sense of what the nature of the concept of vulnerability should be.

[2] Some studies have defined vulnerability as determined by the variability in a household's consumption: those whose consumption is more sensitive to income shocks are considered more vulnerable. Most of the quantitative works on vulnerability in Mexico define vulnerability under these terms (Mckenzie, 2003; Skoufias, 2007).

2.1. Estimation

Our vulnerability to poverty estimates were constructed in three stages. The first stage exploited longitudinal data to construct income-based transition matrices in order to observe movements in and out of poverty during 2002-05 using the US$4/day poverty line. The data were taken from the Mexican Family Life Survey (MxFLS) for the 2002 and 2005 rounds, which were representative at national, regional, urban and rural levels. The first wave included 8,440 households, while the second included 7,572 of the original households, with an attrition rate of 10%; however, only 6,129 households reported income in both waves. These transition matrices allowed us to classify households into four categories: 1) *never poor*, if a household never fell under the poverty line during 2002-05; 2) *always poor*, if it was poor in both waves; 3) *out of poverty*, if it was poor in 2002, but exited poverty in 2005; and 4) *entered poverty*, if it was non-poor in 2002 but fell into poverty in 2005.

The last category was used in a second stage as a binary dependent variable to estimate the probabilities of falling into poverty through a logistic model identifying actual characteristics associated with such movement. The observable characteristics included demographic indicators and labour market resources for the first year, as well as self-reported shocks affecting the household between 2002-05—such as a death, illness or accident of any member, unemployment and business bankruptcy, and the loss of dwelling, business, crops and livestock due to natural disasters.

The third stage constructs income levels associated with the estimated probabilities through a linear regression which uses the log-scale household per capita income in the first year as dependent variable, regressed on the same independent variables as in the previous step. For this purpose, the resulting coefficients and the average of the independent variables—calculated

for an array of estimated probabilities of falling into poverty—were then used to predict the income associated to each probability.

Lopez-Calva and Ortiz-Juarez (2014) proposed a 10% probability of falling into poverty as a dividing line between economic security and vulnerability, and defined the predicted income associated with that probability as the upper bound of vulnerability—or the lower bound for the middle class—with the lower bound being the US$4/day poverty line. The predicted per capita income for the 10% probability was US$9.8; therefore, a household is defined as vulnerable if it lives on US$4-10/day. By extension, the poor are those whose per capita income falls below US$4/day and the middle class those with per capita income of US$10-50/day. The US$10/day threshold is consistent with Ferreira *et al.*'s (2013) findings which looked at income levels that are consistent with self-perceptions of middle-class status, showing that US$10/day corresponds to the lower envelope of such income levels. Furthermore, the threshold is consistent with the empirical evidence that around 10% of non-poor people across Latin America fell into poverty in different periods of the 2000 -2010 decade (Cruces *et al.*, 2015; Stampini *et al.*, 2016).

The previous thresholds were then applied to the nationally representative sample of the Mexican Household Income and Expenditure Survey (ENIGH), which has collected detailed information on income (including direct transfers), expenditures, and in-kind transfers since 1984. In order to measure the size of the vulnerable group we used the ENIGHs covering the period 1992-2012, while in order to assess the coverage of social programmes on the same group we employed the Module of Social Programs (MSP), a dataset commissioned by the Mexican Ministry of Social Development (SEDESOL) as part of the ENIGH for 2002, 2004, 2006 and 2010.

2.2. Incidence and profile

Mexico, as with many other countries in Latin America, has made laudable progress in reducing poverty and expanding the middle class. The $4/day poverty headcount declined from 40.1% to 22.2% from 2000-12, and since the mid-2000s Mexico has had more people in the middle class than in poverty. Despite this progress, about two out of five individuals remain vulnerable to poverty (see Figure 1). In fact, not all who have escaped poverty entered the middle class, but instead moved into the vulnerable group. According to the MxFLS, out of those poor households who escaped poverty during 2002-05 more than a third became vulnerable.

Figure 1

From the identification of vulnerable households, one can delineate their profile. They reside mainly in urban areas (77.6%) and are engaged in waged activities (72.7%), in micro-enterprises (73.9%), in the service sector of hotels and restaurants (19.8%) and, to a lesser extent, in retail (19.1%), manufacturing (17.2%) and agriculture (13.8%) (see Table 1). This group shares some characteristics with the poor (e.g. household size and incidence of disabilities), although it differs significantly in others like income, education, and social security. More importantly, the vulnerable statistically differ from the middle class in almost all indicators considered. Relative to the middle class, for example, the vulnerable have a lower income (by almost three times) and a larger household size (by one member), on average. The vulnerable also exhibit a significantly lower level of ownership and command of durable assets, human capital, and social protection, which provide protection against the risk of sliding into poverty in the event that adverse shocks do materialize.

Table 1

The vulnerable is as prone as other groups to suffer from negative shocks, e.g., deaths, illness, and weather events. Yet, given the group's proximity to poverty, they face a higher risk of falling into poverty as a result of those shocks. A probit model analysis shows that the compound effect of the occurrence of shocks and not having health insurance increased the probability of transitioning from vulnerability to poverty during 2002-05 by about 10%.[3] Successive minor shocks can run down the coping capacity of many non-poor households to the extent of being pushed into poverty. Catastrophic shocks like the *Tequila* financial and economic crisis in 1994-95, the influenza outbreak (H1N1) in 2009, or the latest "3Fs" crises—financial, food and fuel crises—may have pushed many non-poor households into a worse situation. Besides economic and financial crises, Mexico is also exposed to other types of risk, such as volatility of food prices or the occurrence of extreme climate-related events. Some estimates suggest that a 15% increase in food prices would imply, *ceteris paribus*, that approximately 2% of the population would fall into extreme poverty (Chávez *et al.*, 2008), and that the occurrence of natural disasters during 2000-05 may have increased extreme poverty by about 3.7% (Rodríguez-Oreggia *et al.*, 2013).

3. Social programmes and vulnerability to poverty

Past research suggests that raising labour market incomes could be a policy to mitigate vulnerability, as well as public transfers, which have played a significant role in achieving improved social outcomes and enhancing household resilience to shocks (Cord *et al.*, 2015). In rural areas, de la Fuente (2009) showed that CCTs like *Oportunidades*[4] hold some potential to reduce

[3] The analysis used the MxFLS and the groups defined to estimate the magnitude of the relative contribution of not having coverage of health insurance and the occurrence of shocks on the probabilities of falling into poverty during 2002-05, vis-à-vis a baseline household (de la Fuente *et al.*, 2015).

[4] *Oportunidades* was introduced in 1997 as *Progresa*, and it has been recently redesigned as a programme of social inclusion now called *Prospera*. This new programme aims at linking beneficiaries of the traditional cash transfers to a number of other interventions—e.g., financial literacy, inclusion in the labour market, and productive activities for beneficiaries.

vulnerability to poverty, especially to cope with temporary misfortunes. The programme transfers have reduced households' vulnerability while they remained in the programme, through asset acquisition and more stable income flows which allowed them better to plan their expenses and pay their debts and to obtain credit more easily, affecting consumption of goods and services (Escobar Latapí, 2009).

This is why effective social security and social assistance programmes, in combination with insurance and appropriate risk management instruments, are needed to prevent vulnerable households from falling into poverty. Cash transfers, workfare programmes, food aid, healthcare, weather and unemployment insurance, and labour market policies could all support the poorer and vulnerable by strengthening their assets and livelihoods, as well as improving their capacity to manage risks. Some of these instruments already exist in Mexico. Yet, social protection is typically targeted towards the poorer households. In fact, although the foundations of Mexico's social policy have varied significantly over time, a constant has been its targeting of marginalized groups and areas. Social policy has transitioned from the mere provision of basic services in the 1970s and 1980s towards strategies aimed at breaking the intergenerational cycle of poverty through investments in human capital in the 1990s, and incipient mechanisms to create productive options and assets in the early 2000s (Ortiz-Juarez and Perez-Garcia, 2013).

The last three decades have witnessed a significant increase in social spending. During 1990-2010, social spending increased from 38% to 52% as a proportion of programmable spending, and expanded by 12% annually in real per capita terms. Recent evidence suggests that social spending also became pro-poor, positively contributing to the decline in poverty and inequality and to the relative increase of coverage and use of education and health services among the poor (Lopez-Calva *et al.*, 2014; Scott, 2014). The increase in the volume and quality of social spending together with the magnitude of the vulnerable population in Mexico begs the question of the extent to which public transfers reach this group.

3.1. A primer on social and risk insurance programmes in Mexico

Table 2 summarizes the characteristics of some of the principal public transfer schemes and risk insurance programmes currently available in Mexico which are analysed in this paper.

Table 2

The *Oportunidades* programme, Mexico's largest anti-poverty programme, is a CCT scheme covering 5.8 million poor households in 2014, with a budget of US$2.8 billion, equivalent to 0.23% of GDP.[5] Among other benefits, *Oportunidades* delivered 4.9 million scholarships for basic education and 1 million for high school education, with an average monthly transfer ranging US$12-78, and provided beneficiary families with healthcare and nutritional support for 1.6 million children, and food supplements for 1.4 million children aged 6-59 months. The *Programa de Apoyo Alimentario* (*PAL*) was introduced in 2006 to reach the extreme poor in remote localities not covered by *Oportunidades*. In 2011, the *PAL* covered 674,000 families, with an average monthly transfer per family of US$39. The *Programa de Apoyos Directos al Campo* (*PROCAMPO*) was introduced in 1994 to compensate agricultural workers for the opening up of agricultural markets under the NAFTA. In 2011, *PROCAMPO* covered 2.65 million agricultural producers, with an average monthly transfer of US$32. The *70 y más* programme is a non-contributory pension scheme offering US$37/month to all the non-insured aged 70 years or more in localities with fewer than 30,000 inhabitants. It had 2.15 million beneficiaries in 2011 and was expanded to all localities in 2012, with a substantial growth in its budget.[6] Finally, the *Programa de Empleo Temporal* (*PET*) is

[5] The market exchange rate used in all public transfer figures was 13.5 pesos per US dollar.
[6] In February 2013, eligibility was extended to all adults aged 65 years and over and the programme changed its name to *65 y más*. This paper focuses on the *70 y más* programme since its redesign occurred one year after the period under study.

a basic workfare programme created in 1995 providing a maximum of 88 days of work for low wage (originally 90% of the minimum wage, at present 99%). The *PET* was expanded as a response to the crisis in 2009 that resulted from the global financial crisis, and in 2011 it covered 1.1 million beneficiaries, with a total budget of US$215 million for an average monthly transfer per beneficiary of US$17.

In addition, this paper covers three broader transfer categories reported in the ENIGH without identifying specific programmes - other non-contributory pensions, other public scholarships, and other public transfers - as well as two programmes with a very low incidence of beneficiaries: *Opciones Productivas*, aimed at supporting productive projects among rural populations in poverty, through the development of technical and productive skills; and *Crédito a la Palabra*, aimed at providing economic resources to farmers in order to diversify economic activities in areas of low productivity and/or with high occurrence of natural shocks.

The incidence analysis of all these programmes is focused on the vulnerable population, but as a comparison, our paper also shows results for the population in poverty, using the $4/day poverty line, the middle class, and the upper class living with more than $50/day. The $4/day poverty line was equivalent in 2012 to the urban/rural weighted *food* poverty line ($3.99/day) defined officially by the National Council for the Evaluation of Social Development Policy (*CONEVAL*) to measure extreme poverty.

Finally, our paper also incorporates some considerations around two key risk insurance programmes. Firstly, the *Seguro Popular*, a public (non-contributory) and voluntary health insurance programme which covers a wide range of services without co-pays for its affiliates. It aims at expanding healthcare to those without public coverage and preventing impoverishment due to catastrophic health expenses. Since its creation in 2004, this programme has gradually expanded to reach 57.1 million people in 2015. Secondly, the Catastrophe Climate Contingency Insurance Program (*CADENA*), launched in 2003 and managed by the Ministry of Agriculture, aims at

providing state governments with co-funding for assisting farmers after a natural disaster or to provide a subsidy for the state government to purchase insurance (mainly index-based contracts) in order to have enough fiscal resources to respond ex-post. In other words, pay-outs go to the federal and/or the state government (the policyholders) in case of an occurrence of a covered event, which in turn provide assistance to uninsured farmers in the form of a pre-agreed lump sum amount per farm.

3.2. Social programmes largely cover the poor but barely reach the vulnerable

The 2010 MSP identifies at least 15 types of transfers (by destination of resources) which can be grouped into scholarships, purchase of food, non-contributory pensions, and training and incentives transfers aimed at starting up productive projects. Figure 2 shows the incidence and average monthly amounts of such transfers across income groups. While coverage among the poor is the highest, only about 17% of the vulnerable receives such transfers. For those in the middle and upper classes, the incidence is relatively low, but the amounts received are significantly higher than those of the vulnerable. It is noteworthy that among the upper class only 2.6% receive cash transfers, but they receive a monthly average of $173—on average, almost 90% of this amount corresponds to benefits for tertiary education, aid to the elderly, and "other transfers".[7] As in the case of cash transfers, just over 17% of the vulnerable receives in-kind transfers, especially those aimed at improving nutrition and the acquisition of school supplies (see Figure 2).

Figure 2

[7] The category "other transfers" could be capturing, at least in part, the magnitude of the *Procampo* transfers which was disproportionally biased to the upper end of the income distribution during 2002-06, as shown in Figure 4.

In terms of their incidence, Figure 3 shows that direct transfers from *Oportunidades* aimed at incentivizing enrolment and providing assistance to all levels of education and health clinics are the most important transfers in terms of coverage (18%) among the vulnerable. Such transfers are highly relevant for human capital accumulation with potential benefits in helping to prevent falls into poverty in the long run. The vulnerable have also access to *Diconsa* (8.5%) and *Liconsa* (7.4.5%) schemes; however, *Diconsa* has higher incidence among the poor than among the vulnerable, while in *Liconsa*, the vulnerable have higher coverage than that observed among the poor (see Figure 3)[8].

Figure 3

In addition, the MPS for the period 2002-06 reveals the incidence of *PROCAMPO*.[9] During these years, the poor and the vulnerable experienced the largest incidences but significantly higher monthly amounts were allocated for the middle and upper classes. In general, several studies have documented the regressivity of *PROCAMPO* (e.g., Scott, 2014) (see Figure 4).

Figure 4

At first sight, the fact that most social programmes have a low incidence among the vulnerable may not appear to be of concern. Most of these programmes were conceived to target the poor, who, as noted above, differ from the vulnerable in many respects. Such differences lend themselves to embracing both groups single-handedly in the making of social policy and could explain the lack of coverage of social programmes among the vulnerable. Yet, we are considering

[8] The *Diconsa* programme operates the supply of basic and complementary foods at affordable prices in marginalized rural areas, while the *Liconsa* programme produces and commercializes milk at affordable prices among the less advantaged.

[9] Unlike the period 2002-06, the MPS in 2010 does not explicitly capture the incidence and amount of transfers of *Procampo*.

the implications of risk for poverty, and not only the more permanent determinants of poverty. Given that the vulnerable are as exposed to several risks as the poor (see Table 1)[10], the absence of social programmes covering the vulnerable which can build resilience to shocks matters, unless there are insurance programmes for a wide range of existing risks which encompass this group.

It is important to highlight that there are other factors which affect participation levels in social programmes and the distribution of their benefits which go beyond targeting. These factors are separated by the literature into supply and demand factors,[11] which could also explain variations in the take-up of benefits for households eligible for targeted benefits. Supply-side determinants may include availability of public funds which directly translates into the magnitude of the social benefits, local availability of public services for CCTs—e.g., schools and health facilities—and administrative capacities to implement and verify the eligibility and compliance of beneficiaries and to correct inclusion or exclusion errors.

Demand factors which may matter for households' decisions to participate in targeted social programmes typically include their own income or wealth.[12] These factors are particularly important when the benefit of a social programme is conditioned to the consumption of a normal good (e.g., education or health), which by definition implies that poorer eligible households would typically consume less of these goods and thus may have a lower probability of participating. Other barriers may include direct and opportunity costs of participating, particularly due to the conditions required for receiving the benefit (e.g., traveling costs for conducting periodic health check-ups).

[10] Based on the survey design and the standard Taylor linearized variance estimation procedure, the occurrence of health shocks is not statistically different (at the 95% confidence level) between the poor (23.2%) and the vulnerable (23.6%) using the ENIGH, and the same result holds for the combined incidence of health-related shocks, business bankruptcy or unemployment between both groups (24.2% and 23.9%, respectively) as reported by the MxFLS.

[11] See, for instance, Alvarez *et al.* (2008). In addition, Currie (2006) presents a comprehensive review of the recent literature on the take-up of social programmes in the US and the UK, and Rodriguez-Castelan (2017) offers a framework which models households' decisions to participate in CCTs and argues that families need to compare the costs associated with fulfilling the conditions of the programme with the expected benefits of receiving the transfer.

[12] See, for instance, Heinrich (2007) and Behrman *et al.* (2009) who both find that participation is inversely related to individual wealth, and that key correlates of poverty (e.g., few assets, no land ownership, or dirt floors at home) are associated with a higher probability of participation in programmes.

Finally, welfare stigma[13] and weak preferences for the conditioned-on good (e.g., parents' preferences for schooling for CCTs) may also matter in the decisions of households to participate[14].

In sum, the combination of supply, demand and stigma factors is crucial to determine both participation and distribution of benefits, and go well beyond targeting. Thus, even when programmes are targeted it is valid to argue that under a poverty alleviation goal many eligible households in poverty should be covered before expanding social programmes to the vulnerable population.

3.3. Productive programmes have also a low incidence among the vulnerable

Vulnerability in Mexico stems from a combination of highly precarious low-paid employment and low economic security, which remains a protracted source of stress and exposure to many different risks. Indeed, Table 1 suggests that the vulnerable have higher levels of human capital than the poor and are waged employees in much higher proportions (almost three-quarters). Yet, their income levels place them at the edge of poverty and for many their employment conditions seem quite insecure: one-third of salaried workers have no contract, and for more than half employment comes with no benefits. Hence, raising labour market incomes could be a policy focus to mitigate vulnerability, possibly through more vocational and job skills training to improve the capacities of those already employed. In addition, given the presence of many as the second group with self-employed people in their ranks, another option for the vulnerable is to have increased access to credit and incentive transfers to start up productive projects.

[13] Moffitt (1983) was one of the first to model non-participation in social programmes as a utility-maximization decision, emphasising "stigma" as the main cost of participation in means-tested programmes.
[14] Fiszbein and Schady (2009), however, suggest that in assessing whether to send their children to school in response to a CCT programme, parents take into account the quality of local schools, and so are more likely to enrol their children in school if the quality is higher.

In recent years, some studies have questioned whether social programmes like *Oportunidades* (one of whose aims is to increase human capital) should remain faithful to their original mandate, or if they should further their objectives either by granting its youth "graduate" funds to continue into university-level studies or by connecting them to career-type employment opportunities (Escobar Latapí, 2009). On these lines, the so-called *Prospera* extends the traditional benefits of *Oportunidades* by additionally granting scholarships for tertiary/technical education, as well as providing job training and access to productive projects for those beneficiaries in search of a job.

Existing productive programmes from *SEDESOL* during the period under study had a low coverage in general. The MSP reveals that during 2002-06 the proportion of beneficiaries of *PET*, *Opciones Productivas*, and *Crédito a la Palabra* put together ranged from 0.14%-0.37% among the vulnerable, while among the poor 0.84% were beneficiaries of *PET* and only 0.24% and 0.32% benefitted from *Opciones Productivas* and *Crédito a la Palabra*, respectively; among the middle class, the percentage of beneficiaries of all three programmes was roughly 0%. Even for credits and government subsidies[15] whose coverage has been increasing, the incidence is very low and the programme impacts and scope are still unknown (see Table 3).

Table 3

3.4. Risk insurance for the vulnerable has expanded in recent years

Until recently, the vulnerable population in Mexico has been only partially covered by social programmes and none of these were oriented to protect against health, weather or unemployment risks. The exceptions are *Oportunidades* (incidentally, not by design), the *70 y mas* programme, and *Seguro Popular*. The last programme is particularly important in Mexico, where the importance that

[15] This includes credits to expand or improve the business or dwelling; credits for livestock, fertilizers, insecticides and agricultural equipment; and subsidies for energy and fuel, livestock feed, and care of livestock, crops and fisheries.

health insurance holds for preventing poverty is compounded by the fact that both the poor and the vulnerable have very low coverage from formal channels of social security and medical services[16]. According to Table 4, contributory pensions cover only 13.5% of the poor and 34.4% of the vulnerable, while formal public medical services (*IMSS*, *ISSSTE*, *Pemex*, *Sedena*, *Semar*, and other social security services) reach 9% and 30.5%, respectively. Furthermore, one-quarter of both the poor and the vulnerable have no access to medical services at all—notwithstanding that the incidence of health shocks is similar in relative terms across income groups (see Table 1)

Table 4

These results highlight the relevance of social protection strategies such as *70 y mas* for pensions, the universal pension for elder beneficiaries of *Oportunidades* since 2006, and the health coverage granted for the uninsured through *Seguro Popular*. In principle, these schemes could help to avoid out-of-pocket expenditures and hence impoverishment due to healthcare payments. In 2012, the coverage of *Seguro Popular* was significant among the poor (82.4%65.9%) and the vulnerable (63.1%46%) (see Figure 5), although its targeting efficiency could still be improved.

Figure 5

Business bankruptcy or unemployment shocks within the vulnerable showed the highest incidence across income groups in the MxFLS. This high exposure is compounded by the fact that the vulnerable have little access to the credit sources captured by our study. The recently proposed unemployment insurance (approved in 2014, but only in operation since 2016) may eventually address part of this failure, but at the moment there is no robust analysis of its effects on wellbeing.

[16] This refers to access to pensions and medical services by workers in the formal, private and public, labour market.

In general, this insurance scheme allows workers to access up to six monthly payments in the event of losing their jobs, with amounts being paid as follows: the first payment equals 60% of the average worker's wage during the past 24 months; the second equals 50% of the same average wage; and the last four payments are equivalent to 40% of the average wage. This scheme seems to establish a new social right for workers. However, while almost three-quarters of the vulnerable are engaged in wage activities, it is very likely that many reside in the informal sector (more than half of the waged salaried workers reported receiving no benefits and a third reported not having a contract) and thus remain ineligible for unemployment insurance.

Weather risks are prevalent in Mexico, and these can drive people into poverty. The agricultural sector is particularly susceptible to climatic conditions given that most farmers in Mexico remain locked in low productivity rain-fed agriculture (three-quarters of the area cultivated is rain fed). The vulnerable are mainly located in urban areas and engage in wage activities, but many remain involved in agriculture (which is the fourth highest economic activity for this group) and may experience impoverishment if they face weather risks without having access to insurance and credit.

As mentioned in Section 3.1, *CADENA* is the main government mechanism to protect farmers from weather-related shocks. The intended beneficiaries of this scheme are crop and livestock producers without public or private insurance and who own and/or cultivate up to 20 hectares of seasonal crops, or up to 10 hectares of perennial fruit crops in the case of crop farmers. In all likelihood, these eligibility criteria comprise many vulnerable families. Data from a census of *CADENA* beneficiaries affected by various disasters in 2011-12 show that more than three-quarters reported having declared receiving a monthly income roughly equivalent to the $10/day upper-bound of the vulnerable (see Table 5). In other words, many vulnerable households are covered by *CADENA*. The survey results also tend to confirm that *CADENA* components are

targeting and reaching the intended beneficiaries: in the case of crop farmers, almost 100% of the surveyed beneficiaries were within the eligibility criteria.

Table 5

It is debatable, however, whether *CADENA* should be targeted at farmers with up to 20 hectares of irrigated annual crops given that three-quarters (76%) of farms across Mexico for personal consumption have less than five hectares, so in all likelihood many of these farmers are not among the most vulnerable sectors of the rural farming population. Moreover, survey respondents noted that the *CADENA* pay-outs are inadequate to cover the amounts they invested in agricultural production—overall, 60% replied that the pay-outs represented less than a quarter of their investment costs at the time of loss (de la Fuente and Giné, 2016). There is a clear trade-off for the government between increasing or maintaining the coverage for vulnerable farmers and increasing the compensation amounts.

4. Conclusions

The vulnerable are the largest income group in Mexico. These are non-poor people who do not have yet enough "economic security" to be considered part of the middle class. They reside mainly in urban areas and are engaged in wage activities (less so in the primary sector), most likely in informal markets. Their situation probably stems from a combination of highly unsettled and low-paid employments often short-lived and somewhat unpredictable, which remains a protracted source of stress and exposure to many risks.

From a policy perspective, a "first-best" solution to support the vulnerable would be to improve their capabilities and grant adequate entry points into labour, commodity and credit

markets. The provision of adequate jobs to enhance the prospects of assets accumulation and labour mobilization is required, as are job skills, vocational training and productive investment grants. Effective risk management policies are also needed. The provision of CCTs, workfare programmes, food/nutrition aid, and health and weather insurance schemes could go a long way towards mitigating the impact of shocks which could turn the vulnerable into the poor.

Many of these policies and instruments already exist in Mexico. Our analysis reveals, however, that social programmes rarely reach the vulnerable, at least not before 2010. Such results are not indicative of underperformance as most of these programmes were designed to target the poor. Yet, our analysis also shows a very low incidence among the vulnerable within the few programmes which have a productive component, like *Opciones Productivas* and *Crédito a la Palabra*. As the vulnerable have higher endowments of human capital than the poor, they should be receiving support to develop their job skills at work as a means to improve their wage prospects, as well as training and working capital through credit to help them thrive.

Beyond the limited extent to which the vulnerable are covered by public transfers in Mexico, it is important to note that such transfers are not designed to protect them from potential risks. So the question remains as to what extent other social policies respond to risk-driven vulnerability. The evidence in this respect is mixed and more limited: the extended health coverage granted for the uninsured through *Seguro Popular* or non-contributory pensions, should help to avoid out-of-pocket health expenses and thus potential impoverishment. These programmes had a significant coverage of the poor (65.9% and 43.8%, respectively) and the vulnerable (46% and 36.7%, respectively) in 2012.

The vulnerable faced the highest risk of unemployment across income groups. Yet, unemployment insurance in Mexico is nascent. More than half of the vulnerable waged salaried workers reported receiving no benefits and a third reported not having a contract. Moreover, many vulnerable workers remain in agriculture and may experience poverty if they face weather risks

without having insurance. The insurance schemes contained in *CADENA* are likely to cover many vulnerable families given their eligibility criteria. The available evidence corroborates this perception, but a broad picture on the incidence of weather insurance across income groups is still missing. Finally, CCTs like *Oportunidades* also hold some potential to help ameliorate risk-driven vulnerability, but their incidence among the vulnerable is fairly limited (by design).

How then do we tackle the relative absence of social policies focused on the vulnerable? Since the poor and the vulnerable are different groups but both have similar levels of exposure to risks, it is important to investigate whether social programmes and insurance mechanisms in Mexico, particularly those targeted to the poor, should build some flexibility into their design in order to support the vulnerable during contingencies; and/or whether social policy should create a specific set of benefits beyond the poverty line in order to serve the vulnerable permanently. This discussion will likely resonate in the rest of Latin America where the vulnerable are a majority, and where coherent policy responses are needed within a framework in which traditional poverty alleviation strategies, such as CCTs, are not the core of social policy but elements of a comprehensive agenda aimed at strengthening endowments and protecting against risks across the entire income distribution.

In recent years, we have witnessed a growing debate on the relevance of universal benefits, either through social protection floors or through universal basic income with no strings attached. While these instruments are appealing, their implementation is usually prevented by fiscal constraints, political economy factors, or even concerns on disincentives for the labour market. In the case of Mexico, Chávez Presa *et al.* (2012) discuss the merits of a minimum package of benefits for all workers, comprising a minimum income, health and disability insurance, and retirement pensions. In-kind benefits in education and health, they maintain, should be universal, funded by general revenues. The argument is that, even while consumption taxes are not progressive, a

scheme based on general revenues would decrease the reliance of social protection on payroll taxes, which can provide incentives to formal employment.

This paper, however, calls for policy instruments which may enhance economic security across different income groups but that would not be necessarily linked to job status. Such policy instruments could be in the form of targeted social protection schemes for the poor complemented with insurance mechanisms for preventing middle class and vulnerable populations to fall back into poverty in the occurrence of negative shocks. While social policy may have the goal of guaranteeing basic economic security for all, it could also make use of targeting depending on the specific needs. Targeting CCTs to the poor and elderly and insurance mechanisms to the vulnerable might be complementary strategies in a broad approach aimed at reducing the segmentation in access to services which could prevent hardships in the presence of shocks. Segmentation, critical in Mexico and in the rest of Latin America, is the result of systems in which there are multiple service providers, some of which vary dramatically in quality. In Mexico, in particular, segmentation of health coverage (see Table 4) is directly linked to the historical association with formal employment.. In the early 2000s *Seguro Popular* was launched mainly to benefit informal, unprotected workers and their families. But even among formal workers, the provision and quality of health benefits varies depending on whether an individual is an employee in the private sector (*IMSS*), the central government (*ISSSTE*), the defence agencies (e.g., *Sedena* or *Semar*), public enterprises (e.g., *Pemex*), state-level governments, or public universities. Tackling segmentation in the provision of key services like healthcare, combined with targeted interventions to protect households against shocks could be a first significant step towards a more comprehensive social policy, which should adapt to the dynamics of socioeconomic mobility in Mexico.

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Table 1. Characteristics of income groups, 2012

	< $4.0 (poor)	$4 - 10 (vulnerable)	$10 - 50 (middle)	> $50.0 (upper)	Total
Monthly per capita income, at PPP	$ 73.5	$ 203.5	$ 570.1	$ 2,681.5	$ 356.9
Geography					
Urban	51.5%	77.6%	91.3%	94.9%	76.8%
Rural	48.5%	22.4%	8.7%	5.1%	23.2%
	100%	*100%*	*100%*	*100%*	*100%*
Demographics					
Age of the household head	49.1	48.3	48.7	48.7	48.7
Household size	5.2	5.0	4.1	3.2	4.7
Incidence of physical or mental disabilities	7.3%	6.0%	5.1%	2.9%	5.9%
Indigenous	15.1%	4.5%	2.1%	0.8%	5.9%
Age groups					
0 - 5 years	13.7%	11.4%	7.7%	5.0%	10.5%
6 - 11 years	15.8%	12.4%	8.0%	4.8%	11.5%
12 - 14 years	7.1%	6.3%	4.5%	2.3%	5.8%
15 - 17 years	5.8%	6.4%	5.1%	3.5%	5.8%
18 - 25 years	11.2%	14.4%	16.2%	12.9%	14.3%
25 years or more	46.4%	49.0%	58.5%	71.4%	52.2%
	100%	*100%*	*100%*	*100%*	*100%*
65 years or more	8.1%	7.1%	7.2%	8.1%	7.4%
Education of the household head					
Incomplete primary or less	50.0%	35.1%	20.7%	9.6%	32.8%
Complete primary or incomplete secondary	23.2%	22.6%	16.0%	7.0%	20.1%
Complete secondary or more	26.8%	42.3%	63.3%	83.4%	47.1%
	100%	*100%*	*100%*	*100%*	*100%*
School assistance by age groups					
6 - 11 years	97.7%	99.1%	99.7%	99.4%	98.8%
12 - 14 years	89.1%	94.0%	96.3%	97.4%	93.3%
15 - 17 years	61.9%	70.0%	78.8%	89.6%	71.1%
18 - 23 years	23.0%	30.0%	44.0%	64.7%	34.8%
6 - 23 years	73.1%	71.6%	72.6%	81.1%	72.4%
Quality of dwelling and access to basic services					
Dirt floor	9.0%	3.1%	0.8%	0.2%	3.6%
Fragile walls	3.4%	1.6%	0.6%	0.4%	1.6%
Fragile ceilings	4.1%	2.1%	0.6%	0.0%	2.0%
Overcrowded	19.7%	10.6%	2.6%	0.2%	9.7%
No running water	18.8%	8.2%	3.4%	1.2%	8.8%
No sewage	22.3%	8.2%	2.1%	0.3%	9.1%
No electrical energy	1.7%	0.6%	0.1%	0.0%	0.7%

Table 1. Continued

	< $4.0 (poor)	$4 - 10 (vulnerable)	$10 - 50 (middle)	> $50.0 (upper)	Total
Household assets and ownership					
Landline phone	17.6%	33.6%	59.7%	80.9%	40.0%
Cell phone	48.3%	70.4%	83.6%	94.1%	70.5%
TV	85.9%	95.7%	98.1%	99.0%	94.4%
Satellite TV	13.8%	25.3%	49.8%	81.7%	32.4%
Computer	7.4%	21.0%	53.2%	83.7%	30.4%
Internet	5.6%	15.6%	44.7%	78.4%	24.8%
Car or truck	22.9%	35.8%	61.0%	89.7%	42.8%
Refrigerator	65.3%	84.6%	94.8%	98.0%	84.1%
Washing machine	41.7%	63.7%	82.5%	92.0%	65.8%
Air conditioning and/or heating	4.0%	8.1%	20.8%	44.0%	12.3%
Own dwelling	72.4%	69.6%	71.5%	72.1%	71.0%
Occupational status					
Salaried	44.9%	72.7%	81.4%	80.4%	71.7%
Unpaid	15.6%	5.8%	2.7%	1.9%	6.1%
Self-employed	23.8%	13.6%	8.9%	5.2%	13.2%
Employer	15.7%	7.8%	7.0%	12.5%	9.0%
	100%	*100%*	*100%*	*100%*	*100%*
Hours worked, weekly	38.6	44.3	46.0	46.5	44.1
Salaried worker without contract	86.6%	68.2%	41.8%	20.0%	56.1%
Salaried worker without benefits	82.3%	56.0%	30.4%	16.4%	45.4%
Size of enterprise					
Micro: 1 - 10 employees	90.5%	73.9%	55.9%	38.0%	68.3%
Small: 11 - 50 employees	6.7%	15.6%	24.3%	29.1%	18.1%
Medium: 51 - 250 employess	1.9%	6.8%	11.8%	17.5%	8.3%
Big: more than 251 employess	0.9%	3.7%	8.0%	15.4%	5.4%
	100%	*100%*	*100%*	*100%*	*100%*
Sector					
Agriculture	44.1%	13.8%	3.8%	2.7%	14.6%
Minning, energy, and water	0.3%	0.6%	1.3%	2.4%	0.9%
Construction	7.7%	10.0%	6.7%	5.3%	8.1%
Manufacturing	11.3%	17.2%	15.2%	12.7%	15.2%
Wholesale trade	0.8%	1.9%	2.5%	3.9%	2.0%
Retail trade	14.4%	19.1%	17.7%	8.6%	17.4%
Transport and communications	2.8%	4.8%	5.6%	5.0%	4.8%
Financial, professional and other services	2.3%	5.4%	9.0%	14.6%	6.6%
Education and recreation	1.3%	3.2%	10.0%	14.5%	6.0%
Health	0.4%	1.4%	4.8%	10.6%	2.9%
Hotels and restaurants	13.6%	19.8%	16.3%	8.3%	16.9%
Public sector	1.0%	2.9%	7.1%	11.3%	4.5%
	100%	*100%*	*100%*	*100%*	*100%*

Table 1. Continued

	< $4.0 (poor)	$4 - 10 (vulnerable)	$10 - 50 (middle)	> $50.0 (upper)	Total
Food security					
Food security	34.0%	49.9%	75.4%	95.0%	56.1%
Low food insecurity	26.5%	23.4%	14.5%	3.5%	20.6%
Moderate food insecurity	21.3%	16.1%	6.5%	0.9%	13.7%
Severe food insecurity	18.3%	10.5%	3.6%	0.5%	9.7%
	100%	*100%*	*100%*	*100%*	*100%*
Health shocks preventing daily activities	23.2%	23.6%	24.2%	21.7%	23.7%
Shock incidence during 2002-05 (by economic groups as of 2005)*					
Death	9.4%	7.9%	6.9%	5.3%	8.1%
Health shock	12.7%	12.1%	12.2%	10.6%	12.3%
Bankrupcy (BR) or unemployment (UE)	7.6%	9.2%	7.8%	5.3%	8.3%
Natural disaster resulting in:					
Loss of dwelling	1.5%	0.6%	0.7%	0.0%	0.9%
Loss of crops	5.8%	2.1%	1.5%	0.0%	3.1%
Loss of livestock	2.5%	1.2%	1.6%	0.8%	1.7%
Any shock	30.3%	27.2%	23.7%	16.7%	27.0%
Death, health shock and BR/UE	24.2%	23.9%	20.7%	15.9%	23.0%
Loss of dwelling, livestock and crops	8.2%	3.4%	3.2%	0.7%	4.8%

Source: Authors' estimations based on ENIGH 2012. *Authors' calculations based on data from MxFLS panel database.

Note: All monetary figures are given in US$ adjusted by PPP.

Table 2. Brief description of the main social programmes analysed, in Mexico

Program	Beneficiaries	Target group	Benefits
Oportunidades	5.8 million households (2014)	Households with income below the food poverty line	Education scholarships (US$12-78, monthly) Health and prenatal care Nutritional care Food supplements
Programa de Apoyo Alimentario (PAL)	674,000 households (2011)	Extremely poor households in rural (<2,500 inhabitants), highly marginalized areas not covered by *Oportunidades* and with a high concentration of under-5 children, of indigenous population, and of women of childbearing age	Monthly transfer per family of US$39
Programa de Apoyos Directos al Campo	2.65 million individuals (2011)	Agricultural producers	US$96 yearly per ha. to small farmers (under 5 ha.) US$71 yearly per ha. to the rest
70 y más	2.15 million individuals (2011)	Non-insured aged 70 or more in localities with fewer than 30,000 inhabitants	US$37 monthly
Programa de Empleo Temporal (PET)	1.1 million individuals (2011)	Population in marginalized municipalities affected by shocks that negatively impacted productive activities	A maximum of 88 days of work for 99% of the minimum wage
Seguro Popular	57.1 million individuals (2015)	Population without social security coverage from any of the available public health insurance schemes	Public health insurance covering nearly 260 medical interventions and services without co-payments for its affiliates. Services are related to public health, outpatient care, odontology, emergency care, hospital care, and general surgeries.
Mexican Catastrophe Climate Contingency Insurance Program (CADENA)	10 million hectares and 15.5 animal units insured (2014)	Insurance to low-income agricultural producers, fishermen and farmers without public or private insurance, who are affected by drought, frost, snowfall, severe flood, tornado, cyclone, earthquake, volcanic eruption, tsunami, and slope movement.	25-40% of the insurance policy for farmers in highly marginalised municipalities. US$111-US$185 yearly per ha. for rainfed and irrigation crops, respectively (max 20 ha.). US$185 yearly per ha. for fruit trees, coffee and cactus (max 10 ha.). US$44 per unit for food supplements to dairy producers with livestock (max 20 units per producer). US$741 per fishing boat (max 1 boat per fishermen). US$889 per aquaculture unit (max 2 units per producer). US$74 per unit for molluscs farming (max 2 units per producer).

Source: Authors' elaboration based on each programme's documentation.

Table 3. Incidence and amounts of credits and government subsidies by income group, 2002-06

Percentage of households and monthly amounts in US$ adjusted by PPP

Credits and subsidies				
	Coverage		Amount	
Income group	**Credits**	**Subsidies**	**Credits**	**Subsidies**
2002				
Poor	0.32%	0.48%	$ 43.52	$ 49.64
Vulnerable	**0.07%**	**0.09%**	**$ 250.59**	**$ 11.21**
Middle class	0.36%	0.16%	$ 799.77	$ 1,337.91
Upper class	0.00%	0.00%	$ -	$ -
2004				
Poor	0.43%	0.92%	$ 63.96	$ 43.22
Vulnerable	**0.09%**	**0.55%**	**$ 269.81**	**$ 89.97**
Middle class	0.06%	0.37%	$ 206.83	$ 70.40
Upper class	0.00%	0.12%	$ -	$ 112.84
2006				
Poor	0.12%	0.92%	$ 118.03	$ 36.75
Vulnerable	**0.27%**	**0.61%**	**$ 319.23**	**$ 34.51**
Middle class	0.15%	0.49%	$ 135.87	$ 58.68
Upper class	0.23%	0.79%	$ 1,276.61	$ 259.70

Source: Authors' estimations based on ENIGH and MPS 2002-06

Table 4. Social security and medical services among income groups, 2012

	< $4.0 (poor)	**$4 - 10 (vulnerable)**	**$10 - 50 (middle)**	**> $50.0 (upper)**	**Total**
Pensions					
Contributory (social security)	13.5%	34.4%	58.6%	66.9%	38.8%
Non-contributory	43.8%	36.7%	26.2%	8.8%	34.2%
Medical services					
No access	24.7%	22.6%	18.6%	15.8%	21.5%
Seguro Popular	65.9%	46.0%	20.2%	6.5%	40.7%
IMSS	7.9%	25.5%	40.7%	36.3%	27.0%
ISSSTE	0.7%	3.1%	12.3%	14.7%	6.0%
Pemex, Sedena and *Semar*	0.1%	0.4%	1.5%	3.8%	0.8%
Other social security services	0.4%	1.5%	2.3%	2.4%	1.5%
Private	0.1%	0.1%	1.4%	15.1%	0.9%
Other	0.3%	0.8%	2.9%	5.5%	1.5%
	100%	*100%*	*100%*	*100%*	*100%*

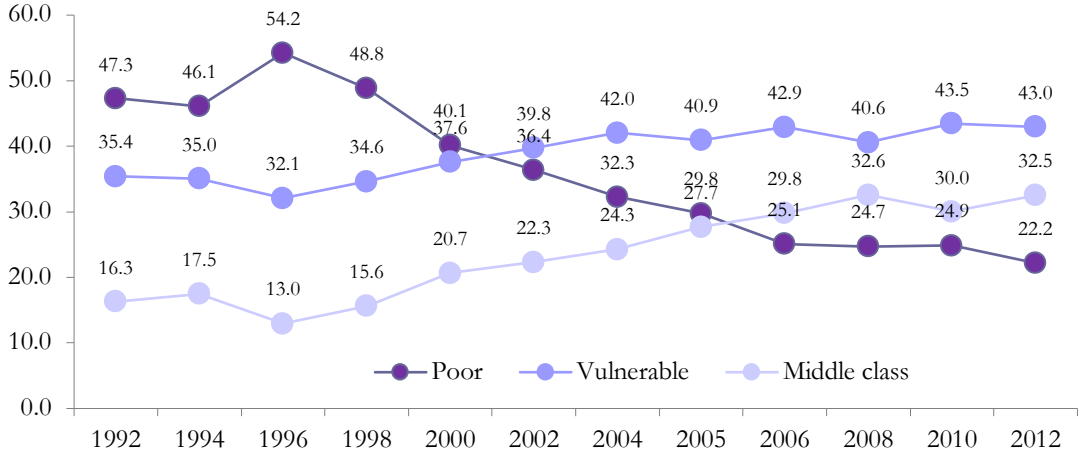
Source: Authors' estimations based on ENIGH 2012
Note: All monetary figures are given in US$ adjusted by PPP.

Table 5. *CADENA* beneficiaries' average monthly income, 2012 (%)

	< MX$1,000 <US$2.5	**MX$1,001-2,000** ~US$2.5-5	**MX$2,001-3,000** ~US$5-7.7	**MX$3,001-4,000** ~US$7.7-10.2	**>MX$4,000** ~>US$10.2	**N/R**
State (recorded disaster)						
Chiapas (Flash floods)	7.6	49.6	22.1	0.8	0.0	19.9
Chihuahua (Drought)	33.4	32.1	9.3	6.3	1.7	17.2
Guanajuato (Drought)	21.2	23.2	25.2	13.4	9.9	7.2
Nayarit (Drought)	46.9	38.8	3.7	0.0	0.0	10.6
Veracruz (Floods)	5.5	41.0	19.0	12.5	7.0	15.0
Veracruz (Drought)	8.8	35.3	14.7	11.8	5.9	23.5
Zacatecas (Drought)	7.6	36.8	30.3	5.5	3.6	16.0
Total	**23.3**	**32.2**	**18.3**	**8.0**	**4.6**	**13.6**

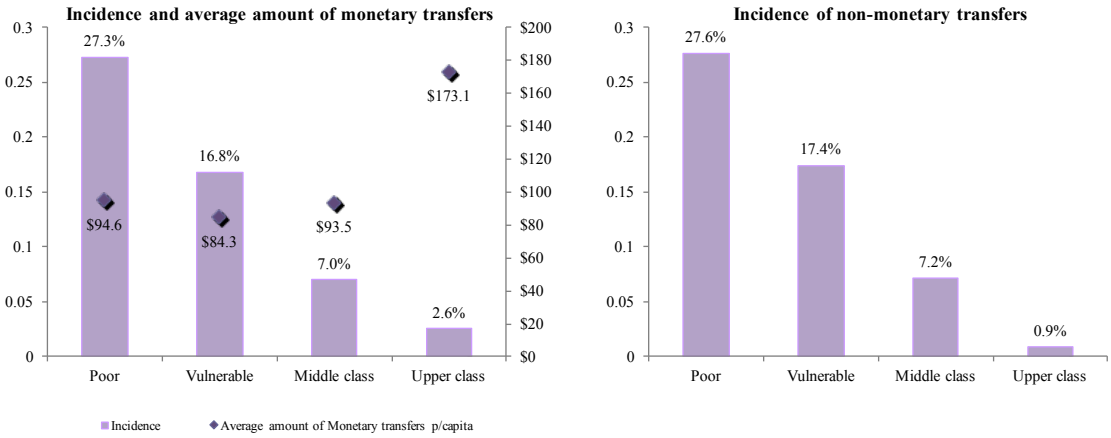
Note: N/R = No Response.
Source: de la Fuente and Giné (2017).

Figure 1. Size of the income groups in Mexico, 1992-2012 (by percentage of population)



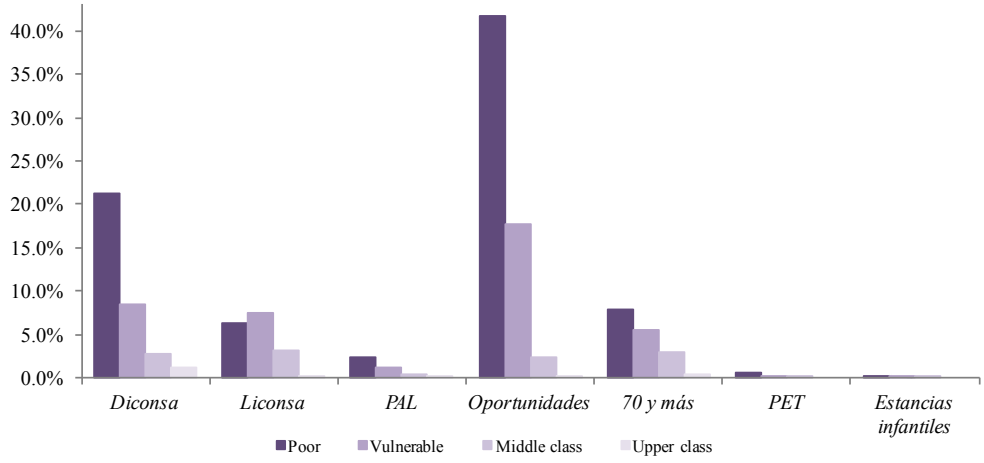
Source: Authors' estimations based on ENIGH 1992-2012. Estimations are based on the net per capita income definition used by *CONEVAL* for the income-based measurement of poverty in Mexico.

Figure 2. Incidence and average amount of monetary and non-monetary transfers by group, 2010 (by percentage of households and monthly dollars, at PPP)



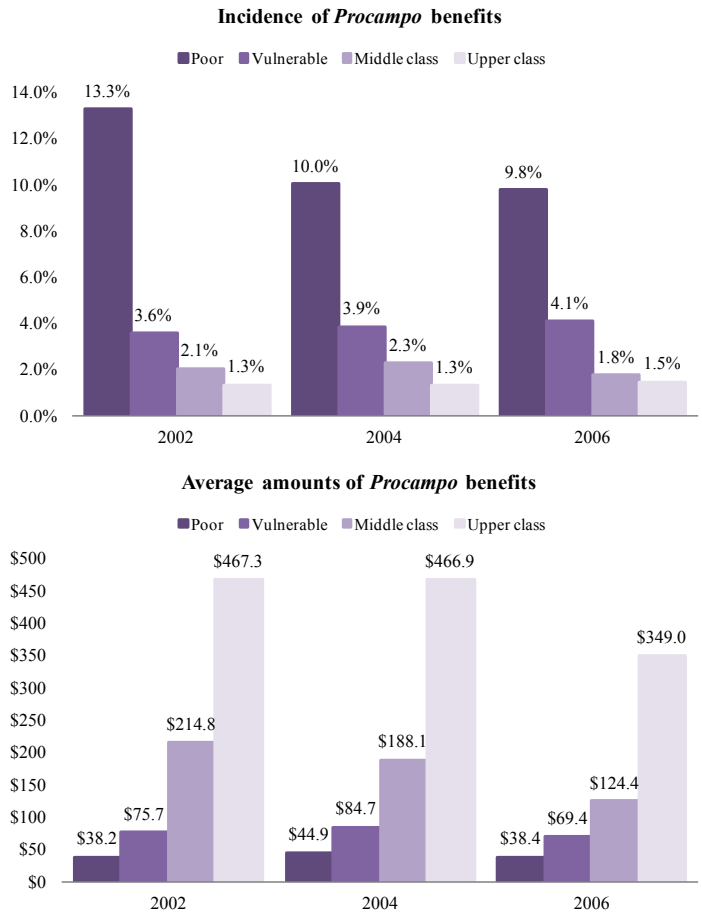
Source: Authors' estimations based on ENIGH and MPS 2010

Figure 3. Incidence by programme and income group, 2010



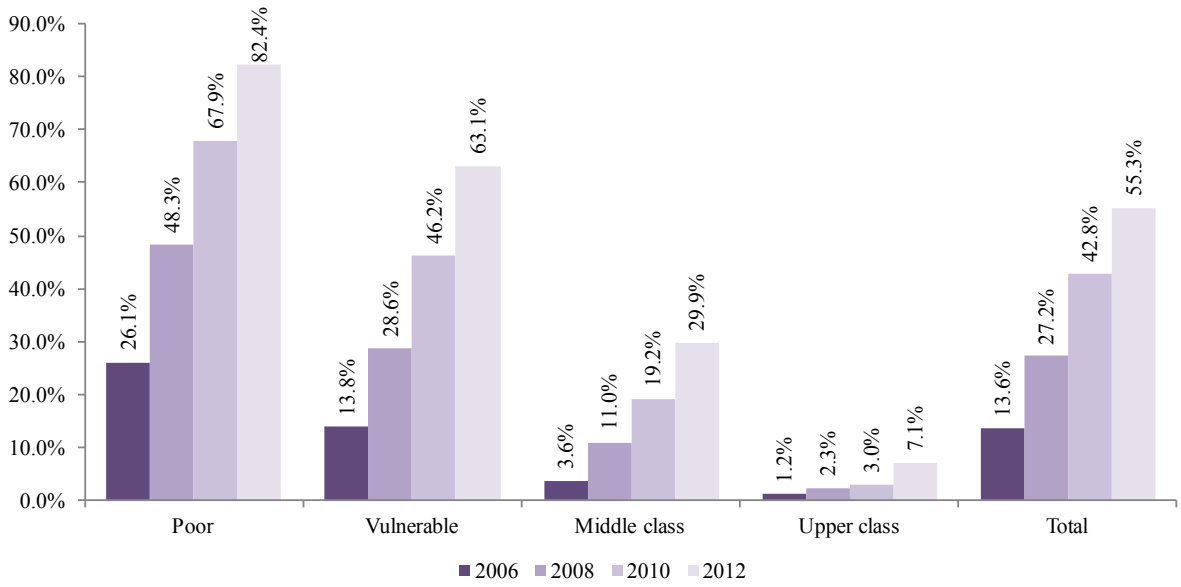
Source: Authors' estimations based on ENIGH and MPS 2010

Figure 4. Incidence and amount of transfers of *PROCAMPO*, 2002-06 (by percentage of households by income group, and monthly dollars at PPP)



Source: Authors' estimations based on ENIGH and MPS 2002-06

Figure 5. Coverage of *Seguro Popular*, 2006-12 (by percentage of population)



Source: Authors' estimations based on ENIGH 2006-12